

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. L5733
ABANDONED RAILROAD
OVER THE
MISSISSIPPI RIVER
DISTRICT 5 - HENNEPIN COUNTY



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION
BY
COLLINS ENGINEERS, INC.

JOB NO. 5221

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. L5733, the East and West Piers, were found to be in good condition with no defects of structural significance observed. The stone masonry was in good condition with only minor hairline cracks observed in the mortar joints at random locations. The top of the footing at the West Pier was exposed with 4 inches of vertical face exposed at the upstream end. The channel bottom appeared stable with no significant scour observed and with minimal changes since the last inspection.

INSPECTION FINDINGS:

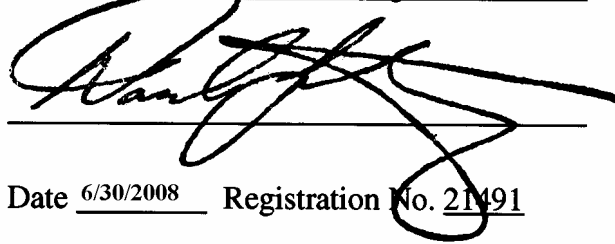
- (A) The top of the footing at the West Pier was exposed from the midpoint along the west face, around the upstream nose, and to the upstream quarter point along the east face, with 4 inches of maximum vertical face exposure detected at the upstream end.
- (B) Overall, the stone masonry was in good condition with only minor hairline cracks observed in the mortar joints at random locations.
- (C) A light accumulation of steel debris was observed scattered on the channel bottom around both piers.

RECOMMENDATIONS:

- (A) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

A large, stylized handwritten signature in black ink, appearing to read 'Dan G. Stromberg', is written over a horizontal line.

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

A large, stylized handwritten signature in black ink, appearing to read 'Dan G. Stromberg', is written over a horizontal line.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: L5733

Feature Crossed: Mississippi River

Feature Carried: Abandoned Railroad

Location: District 5 - Hennepin County

Bridge Description: The superstructure consists of a steel deck truss and is supported by two stone masonry block piers for the portion of bridge across the waterway. Design plans were not available, so footing design information is unknown.

2. INSPECTION DATA

Professional Engineer/Team Leader: Daniel G. Stromberg, P.E., S.E.

Dive Team: Clayton G. Brookins, Valerie Roustan

Date: October 18, 2007

Weather Conditions: Partly Cloudy/Rainy, 60°F

Underwater Visibility: 2 feet

Waterway Velocity: 1.5 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: East and West Piers.

General Shape: The piers consist of an oblong rectangular shaft with pointed noses constructed of stone masonry blocks. The type of support for the rectangular pier footings is unknown.

Maximum Water Depth at Substructure Inspected: Approximately 19.2 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the stone masonry step in the shaft at the south end of the East Pier.

Water Surface: The waterline was approximately 11.5 feet below reference.
Assumed Waterline Elevation = 88.5.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 6

Item 92B: Underwater Inspection: Code B/10/07

Item 113: Scour Critical Bridges: Code G/02

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

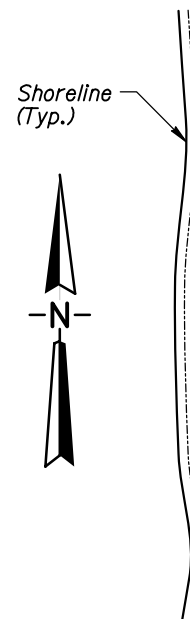
 Yes X No



Photograph 1. View of East Pier, Looking Southwest.

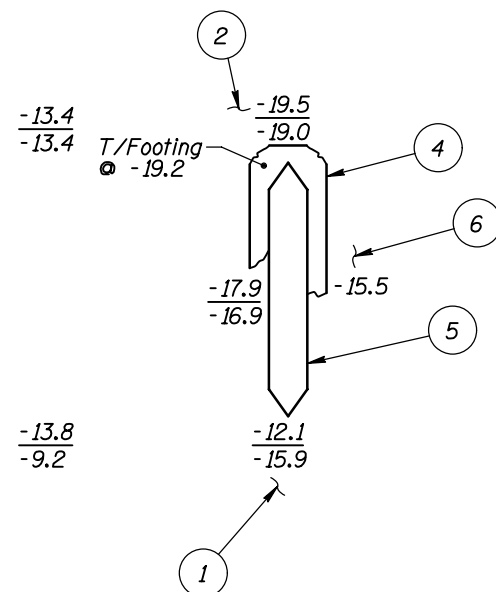


Photograph 2. View of West Pier, Looking West.



-9.2
-8.2

-7.9
-4.2



-15.7
-14.7

-16.4
-14.7

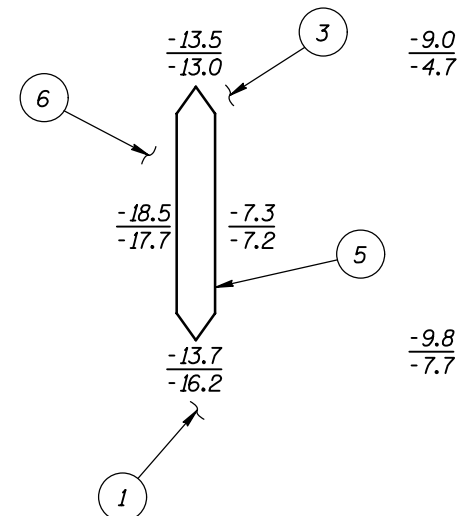
Flow
Mississippi River

-16.3
-14.7

-17.0
-15.2

-18.4
-15.2

-19.1
-14.7



-9.0
-4.7

-9.8
-7.7

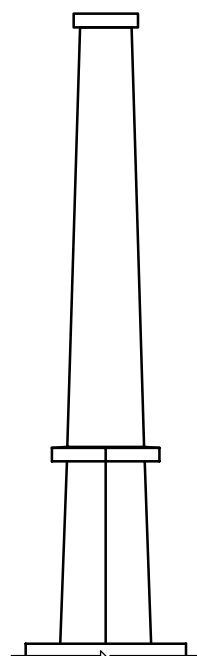
SOUNDING PLAN

INSPECTION NOTES:

- 1 The channel bottom consisted of sand infilling at the downstream end of both piers with up to 1 foot of probe rod penetration.
- 2 The channel bottom consisted of riprap from 1 to 2 feet in diameter at the upstream nose and 6 to 8 inch diameter riprap and sand along both sides of the West Pier.
- 3 The channel bottom consisted of riprap from 1 to 4 feet in diameter at the upstream nose and 6 to 8 inch riprap and sand along both sides of the East Pier.
- 4 The top of the footing was exposed from the quarter point along the west face, around the upstream nose, and to the midpoint along the east face with 4 inches of vertical face detected at the upstream end.
- 5 The stone masonry was in good condition with minor hairline to 1/8 inch (maximum) cracks observed in the mortar joints at random locations.
- 6 A light accumulation of steel debris was observed scattered on the channel bottom around both piers.

GENERAL NOTES:

- 1 The East and West Piers were inspected underwater.
- 2 At the time of inspection on October 18, 2007, the waterline was located approximately 11.5 feet below the top of the stone masonry step in the shaft at the downstream end of the East Pier. Since design drawings were not available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 88.5.
- 3 Soundings indicate the water depth at the time of inspection and are measured in feet.
- 4 Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.



TYPICAL END VIEW OF PIERS

Legend

-5.2 Sounding Depth (10/18/07)
-4.8 Sounding Depth (10/1/02)

Note:

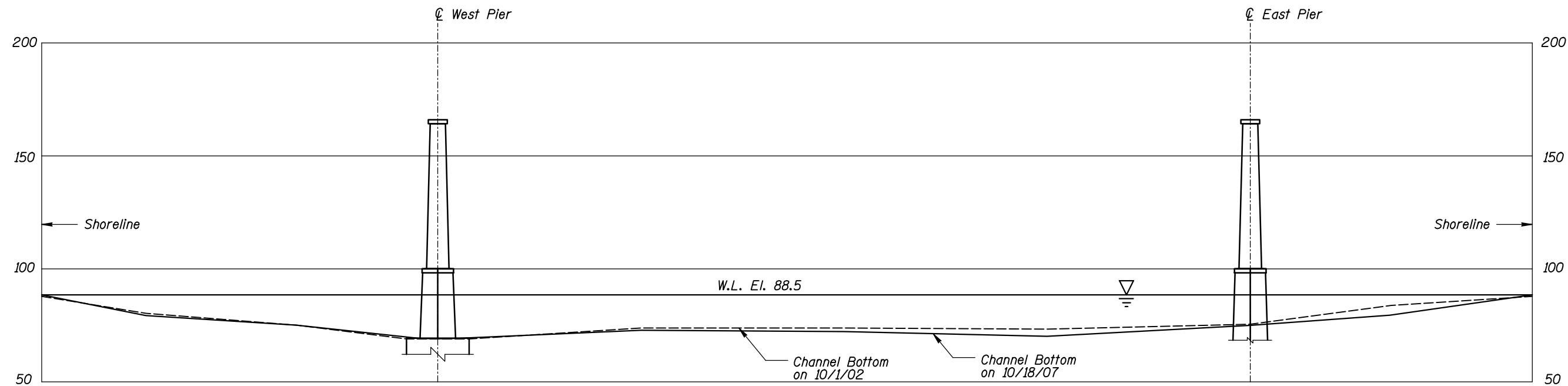
All soundings based on 2007 waterline location.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION

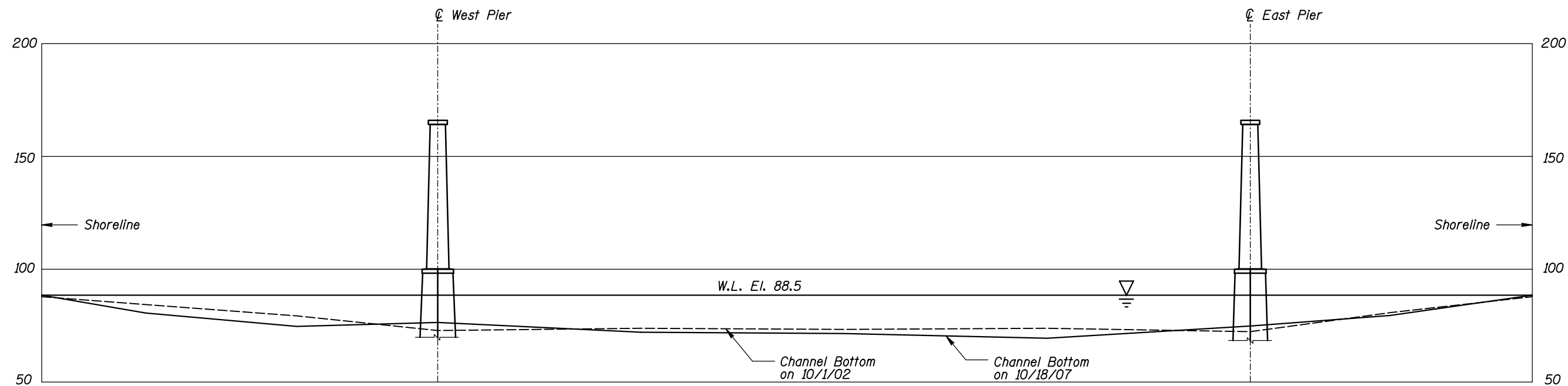
STRUCTURE NO. L5733
OVER THE MISSISSIPPI RIVER
DISTRICT 5, HENNEPIN COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: OCT., 2007
Checked By: VR		Scale: NTS
Code: 5221L5733		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:
Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. L5733 OVER THE MISSISSIPPI RIVER DISTRICT 5, HENNEPIN COUNTY UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: PRH	COLLINS ENGINEERS <small>INC.</small> 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: OCT., 2007
Checked By: VR		Scale: NTS
Code: 5221L5733		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: October 18, 2007

ON-SITE TEAM LEADER: Daniel G. Stromberg, P.E., S.E.

BRIDGE NO: L5733 WEATHER: Partly Cloudy/ Rainy, 60°F

WATERWAY CROSSED: Mississippi River

DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: Clayton G. Brookins, Valerie Roustan

EQUIPMENT: Scuba, Sounding Pole, Camera, u/w Light, Scraper, Probe Rod, Lead Line

TIME IN WATER: 1:10 P.M.

TIME OUT OF WATER: 1:40 P. M.

WATERWAY DATA: VELOCITY 1.5 f.p.s.

VISIBILITY 2.0 feet

DEPTH 19.2 feet maximum at the West Pier

ELEMENTS INSPECTED: East and West Piers

REMARKS: Overall, substructure units inspected were in good condition with no structurally significant defects observed. Minor hairline cracks were observed in the mortar joints at random locations. The top of the footing at the West Pier was exposed from the midpoint along the west face, around the upstream nose, and to the upstream quarter point along the east face, with up to 4 inches of vertical face exposure at the upstream end. The channel bottom appeared stable with no significant scour, and with steel construction debris scattered around both piers.

FURTHER ACTION NEEDED: YES X NO

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. L5733
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Daniel G. Stromberg, P.E., S.E.
WATERWAY CROSSED The Mississippi River Overflow

INSPECTION DATE October 18, 2007

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	SUBSTRUCTURE						CHANNEL					GENERAL					
			PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	West Pier	19.2'	N	7	7	9	N	7	6	N	N	7	6	7	N	N	N	N	N
	East Pier	18.5'	N	7	N	9	N	7	8	N	N	7	7	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, substructure units inspected were in good condition with no structurally significant defects observed. Minor hairline cracks were observed in the mortar joints at random locations. The top of the footing at the West Pier was exposed from the midpoint along the west face, around the upstream nose, and to the upstream quarter point along the east face, with up to 4 inches of vertical face exposure at the upstream end. The channel bottom appeared stable with no significant scour, and with steel construction debris scattered around both piers.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.